(54) Title: EFFICIENT MAPPING OF RECONSTRUCTION ALGORITHMS FOR MAGNETIC RESONANCE IMAGING ONTO A RECONFIGURABLE RECONSTRUCTION SYSTEM
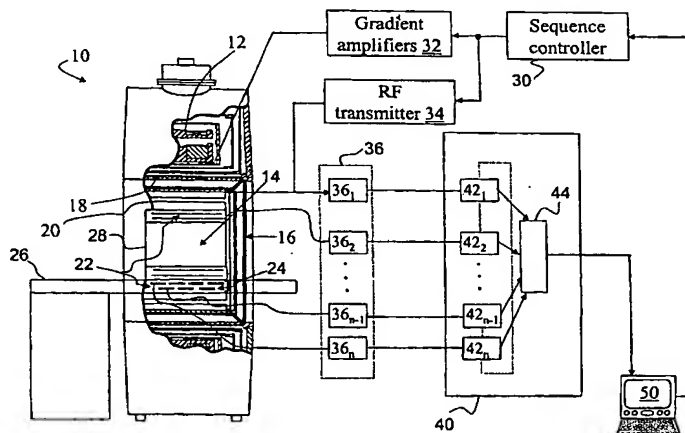
(57) Abstract: A magnetic resonance (MR) system (10) includes radiofrequency (RF) transmitters (34) which send RF pulses into an examination region (14) to excite a spin system to be imaged. Coil elements (20, 24, 28) pick up an MR signal, which is demodulated and converted into digital data by RF receivers (36). A plurality of independent parallel processing channels $(42_1, 42_2, ..., 42_n)$ is operatively connected to the RF receivers to reconstruct images from the digital data. The parallel processing channels $(42_1, 42_2, ..., 42_n)$ include one or more pipeline stages $(54_1, 54_2, ..., 54_m)$. Processing channels and pipeline stages include a plurality of processing or reconstruction units (52). Processing tasks are dynamically allocated to these processing or reconstruction units on a per scan basis using a single general strategy for mapping processing tasks to hardware resources. The connections (56) between the processing or reconstruction units (52) are reconfigured using a switching means (60). In this manner, different numbers of coil elements (20, 24, 28) can be connected with matching numbers of processing channels $(42_1, 42_2, ..., 42_n)$ to exploit available processing resources optimally.

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